

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Murali Ramaswami :  
James Hosker :  
: Group Art Unit: 3671  
Application No. 09/711,124 :  
: Examiner: Thomas A. Beach  
Filed: November 10, 2000 :  
: Attorney Docket No.: 05250.00002  
For: METHODS AND SYSTEMS FOR : (18638-04-0184)  
ANALYZING AND PREDICTING :  
MARKET WINNERS AND LOSERS :

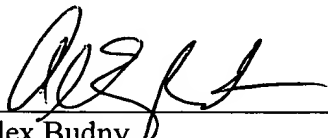
**DISCLAIMING DECLARATION OF CO-AUTHOR OF PUBLICATION**

I, Alex Budny, residing at 104 Washington Ave, Chatham, NJ 07928  
declare as follows:

1. I have read and understood the specification and claims of the above-identified invention.
2. I am listed as a co-author, along with the above-named inventors on the following publication:

“The May List of the ‘Winners’ and ‘Losers’ Using the Lehman Enhanced Momentum (LEM) Model for the S&P 500 and for the FTSE Europe”, a copy of which is attached hereto.

3. I confirm that, with respect to the publication referenced above, I learned or received knowledge about the invention from the above named inventors, that I am not a co-inventor of the subject matter of the above identified invention, that I merely was involved in respect of the invention to carry out assignments and work under the supervisions and direction of the inventors, and that I was listed as co-author in order to receive credit for having collaborated in the research program under the above named inventors’ direction.

  
\_\_\_\_\_  
Alex Budny

July 29, 2004  
Date



# LEHMAN BROTHERS

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## THE OUTLOOK

May 12, 2000

- 2 Global Market  
Analysis  
Murali Ramaswami  
Jim Hosker  
Alex Budny

*The May List of "Winners" and "Losers" Using the Lehman Enhanced Momentum (LEM) Model for the S&P 500 and for the FTSE Europe*

Even with the global market volatility during the month of April, the Technology sector continues to dominate our list of LEM Winners for the S&P 500, while the Cyclical Services, Information and Financial sectors dominated the list of LEM Winners for the FTSE Europe. For the S&P 500, the most recently constructed LEM Long Winners portfolio from three months ago returned 9.6% and the LEM Long/Short strategy returned 12.4%, compared to the 2.1% return of the S&P 500 over a three-month holding period of February 1 through May 8, 2000.

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FIXED INCOME  
EQUITIES  
AND QUANTITATIVE RESEARCH

## GLOBAL DERIVATIVES MARKET ANALYSIS

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## The May List of "Winners" and "Losers" Using the Lehman Enhanced Momentum (LEM) Model for the S&P 500 and for the FTSE Europe

The volatility in Nasdaq and S&P 500 stocks over the last few weeks has again caused people to re-evaluate the viability and success of the Lehman Enhanced Momentum (LEM) strategy. In this article, we update the list of Winners and Losers produced by our LEM model for the S&P 500 and the FTSE Europe. The LEM model consists of stocks that are selected based on our previous research<sup>1</sup> using one-year price momentum and a volume or turnover filter as shown in Figure 1. The May portfolio of the Winners using the LEM model is shown in Figure 3 (Figure 6) and the May portfolio of Losers using the LEM model is shown in Figure 3 (Figure 6) for the S&P 500 (FTSE Europe). The following are some conclusions from the recent rebalance and performance using the LEM strategy:

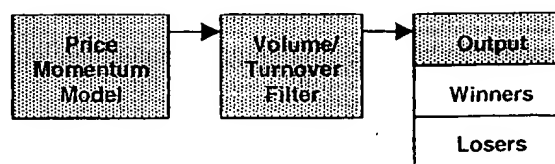
- Technology stocks continue to dominate our list of LEM Winners for the current quarter for the S&P 500.
- After the recent market disruption in April, our January 31, 2000 LEM portfolio performed well over its three-month holding period for the S&P 500. The LEM Long Winners strategy returned 9.6%, while the LEM Long Winners and Short Losers strategy returned 12.4% compared to the 2.1% return of the S&P 500 from February 1, 2000 to May 8, 2000. The highest return of the LEM Long/Short strategy

was on March 10, 2000, at 39.4% for the S&P 500 portfolio.

- Comparing the May 8, 2000 portfolio to the portfolio from three months prior (January 31, 2000) for the S&P 500, we found that the number of technology stocks in the LEM Winners portfolio increased by only 4%. In addition, there has been a slight increase in the number of stocks in the S&P 500 Consumer Cyclical and Utilities sectors and a slight decrease in number of stocks in the Capital Goods, Consumer Staples and Basic Industry sectors.
- For the May 8, 2000 portfolio of LEM Losers, there has been an increase in the number of S&P 500 stocks in the Financial, Consumer Cyclical, Capital Goods, Utilities and Transportation sectors and a decrease in the number of stocks in the Consumer Staples, Technology and Health Care sectors.
- For the FTSE Europe, the Cyclical Services, Information and Financial sectors dominated the May 8, 2000 portfolio of LEM Winners. The countries with the largest distribution of LEM Winners for the FTSE Europe were Greece, France, Ireland and Great Britain.
- For the FTSE Europe, the Cyclical Services, Financial and Non-Cyclical Consumer Goods sectors dominate the May 8, 2000 portfolio of LEM Losers. The country with the largest distribution of LEM Losers for the FTSE Europe was Great Britain.

<sup>1</sup>See "Equity Derivatives and Quantitative Research" standalone piece with 10-year backtest of strategy for the S&P 500, "Introducing The Lehman Enhanced Momentum (LEM) Model," April 17, 2000. In addition, see our "Derivatives Outlook," "The Lehman Enhanced Momentum (LEM) Model 'Winners' and 'Losers' After the Market Turmoil", April 14, 2000; "The New Winners and Losers of the S&P 500 Using Turnover and the 'Momentum Life Cycle' Hypothesis", November 12, 1999; "The Lehman Momentum Model: A Decade of Great Returns and Low Risk", February 18, 2000; "A Momentum Strategy for All Seasons", January 7, 2000; "Enhanced Index Strategy for the S&P 500 Using the 'Winners' of the Lehman Enhanced Momentum (LEM) Model", March 17, 2000; "The 'Winners' and 'Losers' Strategy for Europe", December 10, 1999; "The 'Winners and 'Losers' Strategy: An Alpha Strategy that is also a Defensive Strategy during Market Declines", December 23, 1999; and "Update: December List of 'Winners' and 'Losers' for the US (S&P 500)", December 23, 1999.

Figure 1: The Lehman Enhanced Momentum (LEM) Model



Source: Lehman Brothers.

## Review of the LEM Methodology

To review our strategy, the lowest ranked decile of the past 12 months of price performance is labeled the Losers portfolio and the highest ranked decile of the past 12 months of price performance is labeled the Winners portfolio. We determined that one-year price momentum is the optimal measurement period for a three- and six-month holding period based on prior research<sup>2</sup>. As shown in Figure 1, we enhance this basic model by overlaying a Volume/Turnover Filter on the one-year price momentum of stocks which divides the price momentum decile in half for both Winners and Losers, creating the Lehman Enhanced Momentum (LEM) model.

For the S&P 500 (FTSE Europe) index, the Volume/Turnover Filter outputs 25 (32) Winners and 25 (32) Losers. The Volume/Turnover filter identifies the low-volume Winners ("glamour" stocks) and high-volume Losers (neglected stocks) as stocks that are at the beginning of their "Momentum Life Cycle" (MLC)<sup>3</sup>. The portfolio using this strategy is equal-dollar weighted and market-value neutral by being Long the Winners and Short the Losers at the beginning of each holding period. Alternatively, some fund managers may only want to buy the Winners.

For our analysis, the portfolios are constructed at the end of each quarter and half-year rebalancing period using the constituents of the S&P 500 for the United States. We found in our previous analysis that three-month and six-month holding periods appeared to be the optimal investment horizon using one-year price momentum. In fact, as the holding period increases to 12 months, reversal of momentum based performance may occur in certain quarters<sup>4</sup>.

## Conclusions

We compared the May 8, 2000 rebalanced portfolio of LEM Winners and LEM Losers to the prior three-month portfolio of January 31, 1999 to determine the individual stock portfolio turnover and S&P 500 sector changes. As can be seen in Figures 2 and 3, the portfolio of Winners had a 48% stock turnover from the January 31, 2000 portfolio of Winners, while the portfolio of Losers had an average 56% stock turnover from the January 31, 2000, portfolio of Losers.

**Figure 2: Selection of LEM Winners on May 8, 2000 with a Three-Month Holding Period from May 8, 2000 to August 7, 2000 for the S&P 500**

LEM Winners May 8, 2000	S&P Sector	Stock in LEM Winners January 31, 2000
EMC	Technology	Yes
SUNW	Technology	Yes
QCOM	Technology	No
AAPL	Technology	Yes
NXTL	Communications	Yes
AMAT	Technology	Yes
MDT	Health Care	No
XLNX	Technology	Yes
RIG	Energy	No
TER	Technology	Yes
ORCL	Technology	No
KLAC	Technology	Yes
INTC	Technology	No
TXN	Technology	Yes
ALTR	Technology	No
CC	Consumer Cyclical	No
LXK	Technology	No
WLA	Health Care	No
CSCO	Technology	Yes
ADCT	Technology	Yes
CMVT	Technology	Yes
LSI	Technology	No
ENE	Utilities	No
MU	Technology	No
RDC	Energy	Yes

Note: Sectors are S&P 500 classifications.

Source: Lehman Brothers.

For the May 8, 2000 portfolio of LEM Winners, there has been a slight increase in the number of stocks in the S&P 500 Technology, Consumer Cyclical and Utilities sectors and a slight decrease in number of stocks in the Capital Goods, Consumer Staples and Basic Industry sectors. The May 8, 2000 portfolio of LEM Winners contained the following weights for each S&P 500 Sector: 72% Technology, 8% Health Care, 8% Energy, 4% Communications, 4% Consumer Cyclical and 4% Utilities. However, the January 31, 2000, portfolio of LEM Winners contained the following weights for each S&P 500 Sector: 68% Technology, 8% Energy, 8% Health Care, 4% Basic Industry, 4% Consumer Staples, 4% Capital Goods, and 4% Communications.

<sup>2</sup> See our "Equity Derivative Research Report," "Winners Will be Winners, Losers Will Be Losers: A Tale of Relative Momentum," January 13, 1999.

<sup>3</sup> Momentum Life Cycle (MLC) Hypothesis from Charles M. Lee and Bhaskaran Swaminathan, "Price Momentum and Trading Volume," Working Paper, Johnson Graduate School of Management - Cornell University, June 23, 1999.

<sup>4</sup> See footnote 2.

**Figure 3: Selection of LEM Losers on May 8, 2000 with a Three-Month Holding Period from May 8, 2000 to August 7, 2000 for the S&P 500**

LEM Losers May 8, 2000	S&P Sector	Stock in LEM Losers January 31, 2000
SAFC	Financial	No
NSI	Capital Goods	No
CSX	Transportation	No
NSC	Transportation	No
HBAN	Financial	No
CCK	Capital Goods	No
WIN	Consumer Staple	No
GT	Consumer Cyclical	No
ACK	Consumer Cyclical	Yes
HCR	Health Care	No
UST	Consumer Staple	No
HLT	Consumer Cyclical	Yes
KM	Consumer Cyclical	Yes
JCP	Consumer Cyclical	No
OWC	Consumer Cyclical	Yes
MDR	Capital Goods	Yes
CMS	Utilities	No
ALT	Basic Industry	Yes
PGR	Financial	Yes
XRX	Technology	Yes
MYG	Consumer Cyclical	No
ONE	Financial	Yes
CNC	Financial	Yes
RTNB	Technology	Yes
UNM	Financial	No

Note: Sectors are S&P 500 classifications.  
Source: Lehman Brothers.

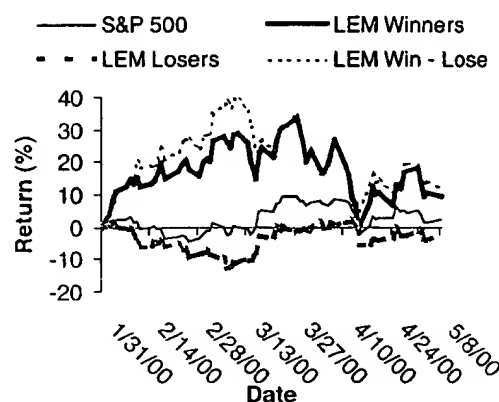
For the May 8, 2000 portfolio of LEM Losers, there has been an increase in the number of S&P 500 stocks in the Financial, Consumer Cyclical, Capital Goods, Utilities and Transportation sectors and a decrease in the number of stocks in the Consumer Staples, Technology and Health Care sectors. The May 8, 2000 portfolio of LEM Losers contained the following weights for each S&P 500 Sector: 28% Consumer Cyclicals, 24% Financials, 12% Capital Goods, 8% Technology, 8% Consumer Staples, 8% Transportation, 4% Health Care, 4% Basic Industry and 4% Utilities. The January 31, 2000, portfolio of LEM Losers contained the following weights for each S&P 500 Sector: 24% Consumer Cyclicals, 24% Consumer Staples, 16% Financials, 16% Technology, 8% Health Care, 8% Capital Goods, and 4% Basic Industry.

As shown in Figure 4, the January 31, 2000 strategy of Long LEM Winners or Long LEM Winners and Short LEM Losers performed well compared to the S&P 500. However, the April sell-off has reduced the performance of the LEM Long/Short strategy from its high return of 39.4% on March 10, 2000, but the portfolio still provided returns higher than the S&P 500 on its rebalance date.

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The LEM Long Winners strategy returned 9.6%, while the LEM Long Winners and Short Losers strategy returned 12.4% compared to the 2.1% return of the S&P 500 at the end of the holding period.

**Figure 4: Normalized Performance of January 31, 1999 Rebalanced Portfolio of LEM Winners and Losers with a Three-Month Holding Period of February 1, 2000 to May 8, 2000 for the S&P 500**



Note: Returns in the above figure exclude transaction costs. Above figure shows the normalized return for the three-month holding period after the quarterly rebalance at the end of January 2000.  
Source: Lehman Brothers.

Figures 5 and 6 show the updated Winners and Losers lists for the FTSE Europe for the next three- or six-month holding period. The Winners have the following FTSE Europe sector distribution: 28.125% Cyclical Services, 18.75% Information, 12.5% Financials, 9.375% Non-Cyclical Consumer Goods, 9.375% Basic Industries, 6.25% Cyclical Consumer Goods, 6.25% Non-Cyclical Services, 6.25% General Industrials, and 3.125% Utilities. The LEM Winners for the FTSE Europe have the following geographically distribution: 37.5% Greece, 18.75% France, 12.5% Ireland, 12.5% Great Britain, 6.25% Netherlands, 6.25% Sweden, 3.125% Switzerland, and 3.125% Finland.

The Losers have the following FTSE Europe sector distribution: 51.7% Cyclical Services, 19.4% Financials, 12.9% Non-Cyclical Consumer Goods, 3.2% Basic Industries, 3.2% Cyclical Consumer Goods, 3.2% General Industrials, 3.2% Utilities, and 3.2% Non-Cyclical Services. The LEM Losers for the FTSE Europe are 54.5% Great Britain, 6.5% Austria, 6.5% Belgium, 6.5% Germany, 6.5% Denmark, 6.5% Sweden, 3.25% Greece, 3.25% Italy, 3.25% Netherlands, and 3.25% Portugal.

Figure 5: Selection of the LEM Winners on May 8, 2000 for the FTSE Europe

LEM Winners May 8, 2000	FTSE Sector	Country
ADECCO CHF10 (REG)	Cyclical Services	Switzerland
NOKIA	Information	Finland
BOUYGUES FFR100	Basic Industries	France
LVMH	Cyclical Consumer Goods	France
SAGEM FFR100	Information	France
CHRISTIAN DIOR	Cyclical Consumer Goods	France
FRANCE TELECOM ORD	Non-Cyclical Services	France
ST MICROELECTRONICS	Information	France
BOWTHORPE	General Industrials	Great Britain
EXEL PLC	Cyclical Services	Great Britain
BRITISH SKY BROADCASTING GROUP	Cyclical Services	Great Britain
CENTRICA	Utilities	Great Britain
ATTICA ENTERPRISES SA HOLDINGS	Cyclical Services	Greece
ETHNIKI GENERAL INS	Financials	Greece
HELLENIC SUGAR INDS	Non-Cyclical Consumer Goods	Greece
N.I.B.I.D (CR)	Financials	Greece
N.I.B.I.D (PR)	Financials	Greece
DELTA INFORMATICS (CR)	Information	Greece
HELLENIC DUTY FREE SHOPS (CR)	Cyclical Services	Greece
GENERAL CONSTRUCTION CO. (CR)	Basic Industries	Greece
HELLENIC TECHNODOMIKI (CR)	Basic Industries	Greece
INFORM P. LYKOS (CR)	Cyclical Services	Greece
M. J. MAILLIS (CB)	Non-Cyclical Consumer Goods	Greece
RADIO A. KORASSIDIS COMMERCIAL ENTERPRIS	Cyclical Services	Greece
INDEPENDENT NEWS	Cyclical Services	Ireland
RYANAIR HOLDINGS ORD IEP0.04	Cyclical Services	Ireland
ELAN CORPORATION PLC	Non-Cyclical Consumer Goods	Ireland
IONA CORPORATION PLC	Information	Ireland
KONINKLIJKE PHILIPS ELECTRONIC	General Industrials	Netherlands
ASM LITHOGRAPHY	Information	Netherlands
SKANDIA FORSAKRING SKR25	Financials	Sweden
NETCOM' B'	Non-Cyclical Services	Sweden

Note: Sectors are FTSE Europe classifications.

Source: Lehman Brothers.

Figure 6: Selection of the LEM Losers on May 8, 2000 for the FTSE Europe

LEM Losers May 8, 2000	FTSE Sector	Country
AUSTRIAN AIRLINES	Cyclical Services	Austria
AUSTRIA TABAK&ATS100	Non-Cyclical Consumer Goods	Austria
GEVAERT PHOTO PRODUCTS CAP NPV	Basic Industries	Belgium
S.A. DIETEREN	Cyclical Services	Belgium
VOLKSWAGEN AG DM50	Cyclical Consumer Goods	Germany
METRO AG	Cyclical Services	Germany
RATIN A/S A	Cyclical Services	Denmark
RATIN A/S B	Cyclical Services	Denmark
BANK OF SCOTLAND(GOVERNOR' CO OF)	Financials	Great Britain
ARCADIA GROUP	Cyclical Services	Great Britain
LLOYDS TSB GROUP	Financials	Great Britain
MARKS' SPENCER	Cyclical Services	Great Britain
MCKECHNIE	General Industrials	Great Britain
PROVIDENT FINANCIAL	Financials	Great Britain
RENTOKIL INITIAL	Cyclical Services	Great Britain
ROYAL BANK OF SCOTLAND GROUP	Financials	Great Britain
SCOTTISH' NEWCASTLE	Cyclical Services	Great Britain
STOREHOUSE	Cyclical Services	Great Britain
TATE' LYLE	Non-Cyclical Consumer Goods	Great Britain
WHITBREAD	Cyclical Services	Great Britain
GREAT UNIVERSAL STORES	Cyclical Services	Great Britain
ABBAY NATIONAL	Financials	Great Britain
POWERGEN	Utilities	Great Britain
ARRIVA	Cyclical Services	Great Britain
STAGECOACH HLDGS	Cyclical Services	Great Britain
EFG EUROBANK&(CR)	Financials	Greece
RINASCENTE (LA) LIT1000	Cyclical Services	Italy
WOLTERS KLUWER CVA	Cyclical Services	Netherlands
JERONIMO MARTINS	Non-Cyclical Services	Portugal
GAMBRO B	Non-Cyclical Consumer Goods	Sweden
GAMBRO AB A	Non-Cyclical Consumer Goods	Sweden

Note: Sectors are FTSE Europe classifications.

Source: Lehman Brothers.

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US00-1181



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James Hosker :  
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**DECLARATION OF JAMES HOSKER**

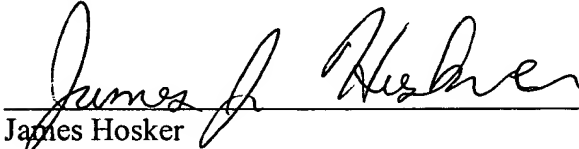
I, James Hosker, residing at One Columbus Place, N22F, New York, NY  
declare as follows:

1. I am a co-inventor of the subject matter in the above-referenced patent application.

2. I am listed as a co-author on the following publication:

“The May List of the ‘Winners’ and ‘Losers’ Using the Lehman Enhanced Momentum (LEM) Model for the S&P 500 and for the FTSE Europe”, a copy of which is attached hereto.

3. The publication referenced above was published on May 12, 2000. The May 12, 1999 date listed in the upper right hand corner of pages 2 through 6 of the publication is a mistake. Instead, the publication date of May 12, 2000 on the first page of the publication is correct. Indeed, the publication references and reports on data collected during the year 2000, and articles published in the year 2000, thereby making a May 12, 1999 publication date an impossibility. In addition, the copyright notice on the last page of the publication indicates a 2000 publication date.

  
James Hosker

7/29/04  
Date



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## THE OUTLOOK

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RESEARCH  
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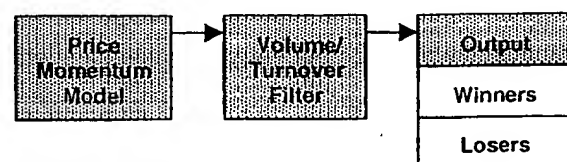
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- For the FTSE Europe, the Cyclical Services, Information and Financial sectors dominated the May 8, 2000 portfolio of LEM Winners. The countries with the largest distribution of LEM Winners for the FTSE Europe were Greece, France, Ireland and Great Britain.
- For the FTSE Europe, the Cyclical Services, Financial and Non-Cyclical Consumer Goods sectors dominate the May 8, 2000 portfolio of LEM Losers. The country with the largest distribution of LEM Losers for the FTSE Europe was Great Britain.

<sup>1</sup>See "Equity Derivatives and Quantitative Research" standalone piece with 10-year backtest of strategy for the S&P 500, "Introducing The Lehman Enhanced Momentum (LEM) Model," April 17, 2000. In addition, see our "Derivatives Outlook," "The Lehman Enhanced Momentum (LEM) Model 'Winners' and 'Losers' After the Market Turmoil", April 14, 2000; "The New Winners and Losers of the S&P 500 Using Turnover and the 'Momentum Life Cycle' Hypothesis", November 12, 1999; "The Lehman Momentum Model: A Decade of Great Returns and Low Risk", February 18, 2000; "A Momentum Strategy for All Seasons", January 7, 2000; "Enhanced Index Strategy for the S&P 500 Using the 'Winners' of the Lehman Enhanced Momentum (LEM) Model", March 17, 2000; "The 'Winners' and 'Losers' Strategy for Europe", December 10, 1999; "The 'Winners' and 'Losers' Strategy: An Alpha Strategy that is also a Defensive Strategy during Market Declines", December 23, 1999; and "Update: December List of 'Winners' and 'Losers' for the US (S&P 500)", December 23, 1999.

Figure 1: The Lehman Enhanced Momentum (LEM) Model



Source: Lehman Brothers.

## Review of the LEM Methodology

To review our strategy, the lowest ranked decile of the past 12 months of price performance is labeled the Losers portfolio and the highest ranked decile of the past 12 months of price performance is labeled the Winners portfolio. We determined that one-year price momentum is the optimal measurement period for a three- and six-month holding period based on prior research<sup>2</sup>. As shown in Figure 1, we enhance this basic model by overlaying a Volume/Turnover Filter on the one-year price momentum of stocks which divides the price momentum decile in half for both Winners and Losers, creating the Lehman Enhanced Momentum (LEM) model.

For the S&P 500 (FTSE Europe) index, the Volume/Turnover Filter outputs 25 (32) Winners and 25 (32) Losers. The Volume/Turnover filter identifies the low-volume Winners ("glamour" stocks) and high-volume Losers (neglected stocks) as stocks that are at the beginning of their "Momentum Life Cycle" (MLC)<sup>3</sup>. The portfolio using this strategy is equal-dollar weighted and market-value neutral by being Long the Winners and Short the Losers at the beginning of each holding period. Alternatively, some fund managers may only want to buy the Winners.

For our analysis, the portfolios are constructed at the end of each quarter and half-year rebalancing period using the constituents of the S&P 500 for the United States. We found in our previous analysis that three-month and six-month holding periods appeared to be the optimal investment horizon using one-year price momentum. In fact, as the holding period increases to 12 months, reversal of momentum based performance may occur in certain quarters<sup>4</sup>.

## Conclusions

We compared the May 8, 2000 rebalanced portfolio of LEM Winners and LEM Losers to the prior three-month portfolio of January 31, 1999 to determine the individual stock portfolio turnover and S&P 500 sector changes. As can be seen in Figures 2 and 3, the portfolio of Winners had a 48% stock turnover from the January 31, 2000 portfolio of Winners, while the portfolio of Losers had an average 56% stock turnover from the January 31, 2000, portfolio of Losers.

**Figure 2: Selection of LEM Winners on May 8, 2000 with a Three-Month Holding Period from May 8, 2000 to August 7, 2000 for the S&P 500**

LEM Winners May 8, 2000	S&P Sector	Stock in LEM Winners January 31, 2000
EMC	Technology	Yes
SUNW	Technology	Yes
QCOM	Technology	No
AAPL	Technology	Yes
NXTL	Communications	Yes
AMAT	Technology	Yes
MDT	Health Care	No
XLNX	Technology	Yes
RIG	Energy	No
TER	Technology	Yes
ORCL	Technology	No
KLAC	Technology	Yes
INTC	Technology	No
TXN	Technology	Yes
ALTR	Technology	No
CC	Consumer Cyclical	No
LXK	Technology	No
WLA	Health Care	No
CSCO	Technology	Yes
ADCT	Technology	Yes
CMVT	Technology	Yes
LSI	Technology	No
ENE	Utilities	No
MU	Technology	No
RDC	Energy	Yes

Note: Sectors are S&P 500 classifications.

Source: Lehman Brothers.

For the May 8, 2000 portfolio of LEM Winners, there has been a slight increase in the number of stocks in the S&P 500 Technology, Consumer Cyclical and Utilities sectors and a slight decrease in number of stocks in the Capital Goods, Consumer Staples and Basic Industry sectors. The May 8, 2000 portfolio of LEM Winners contained the following weights for each S&P 500 Sector: 72% Technology, 8% Health Care, 8% Energy, 4% Communications, 4% Consumer Cyclical and 4% Utilities. However, the January 31, 2000, portfolio of LEM Winners contained the following weights for each S&P 500 Sector: 68% Technology, 8% Energy, 8% Health Care, 4% Basic Industry, 4% Consumer Staples, 4% Capital Goods, and 4% Communications.

<sup>2</sup> See our "Equity Derivative Research Report," "Winners Will be Winners, Losers Will Be Losers: A Tale of Relative Momentum," January 13, 1999.

<sup>3</sup> Momentum Life Cycle (MLC) Hypothesis from Charles M. Lee and Bhaskaran Swaminathan, "Price Momentum and Trading Volume," Working Paper, Johnson Graduate School of Management - Cornell University, June 23, 1999.

<sup>4</sup> See footnote 2.

**Figure 3: Selection of LEM Losers on May 8, 2000 with a Three-Month Holding Period from May 8, 2000 to August 7, 2000 for the S&P 500**

LEM Losers May 8, 2000	S&P Sector	Stock in LEM Losers January 31, 2000
SAFC	Financial	No
NSI	Capital Goods	No
CSX	Transportation	No
NSC	Transportation	No
HBAN	Financial	No
CCK	Capital Goods	No
WIN	Consumer Staple	No
GT	Consumer Cyclical	No
ACK	Consumer Cyclical	Yes
HCR	Health Care	No
UST	Consumer Staple	No
HLT	Consumer Cyclical	Yes
KM	Consumer Cyclical	Yes
JCP	Consumer Cyclical	No
OWC	Consumer Cyclical	Yes
MDR	Capital Goods	Yes
CMS	Utilities	No
ALT	Basic Industry	Yes
PGR	Financial	Yes
XRX	Technology	Yes
MYG	Consumer Cyclical	No
ONE	Financial	Yes
CNC	Financial	Yes
RTNB	Technology	Yes
UNM	Financial	No

Note: Sectors are S&P 500 classifications.  
Source: Lehman Brothers.

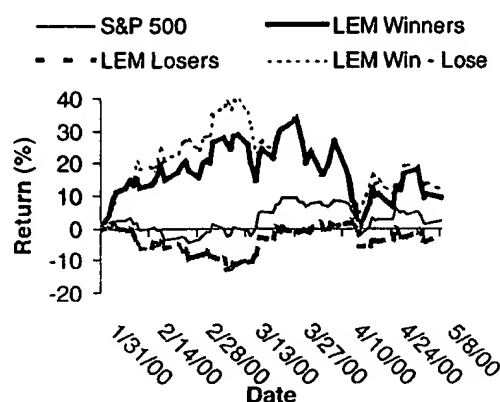
For the May 8, 2000 portfolio of LEM Losers, there has been an increase in the number of S&P 500 stocks in the Financial, Consumer Cyclical, Capital Goods, Utilities and Transportation sectors and a decrease in the number of stocks in the Consumer Staples, Technology and Health Care sectors. The May 8, 2000 portfolio of LEM Losers contained the following weights for each S&P 500 Sector: 28% Consumer Cyclicals, 24% Financials, 12% Capital Goods, 8% Technology, 8% Consumer Staples, 8% Transportation, 4% Health Care, 4% Basic Industry and 4% Utilities. The January 31, 2000, portfolio of LEM Losers contained the following weights for each S&P 500 Sector: 24% Consumer Cyclicals, 24% Consumer Staples, 16% Financials, 16% Technology, 8% Health Care, 8% Capital Goods, and 4% Basic Industry.

As shown in Figure 4, the January 31, 2000 strategy of Long LEM Winners or Long LEM Winners and Short LEM Losers performed well compared to the S&P 500. However, the April sell-off has reduced the performance of the LEM Long/Short strategy from its high return of 39.4% on March 10, 2000, but the portfolio still provided returns higher than the S&P 500 on its rebalance date.

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The LEM Long Winners strategy returned 9.6%, while the LEM Long Winners and Short Losers strategy returned 12.4% compared to the 2.1% return of the S&P 500 at the end of the holding period.

**Figure 4: Normalized Performance of January 31, 1999 Rebalanced Portfolio of LEM Winners and Losers with a Three-Month Holding Period of February 1, 2000 to May 8, 2000 for the S&P 500**



Note: Returns in the above figure exclude transaction costs. Above figure shows the normalized return for the three-month holding period after the quarterly rebalance at the end of January 2000.  
Source: Lehman Brothers.

Figures 5 and 6 show the updated Winners and Losers lists for the FTSE Europe for the next three- or six-month holding period. The Winners have the following FTSE Europe sector distribution: 28.125% Cyclical Services, 18.75% Information, 12.5% Financials, 9.375% Non-Cyclical Consumer Goods, 9.375% Basic Industries, 6.25% Cyclical Consumer Goods, 6.25% Non-Cyclical Services, 6.25% General Industrials, and 3.125% Utilities. The LEM Winners for the FTSE Europe have the following geographically distribution: 37.5% Greece, 18.75% France, 12.5% Ireland, 12.5% Great Britain, 6.25% Netherlands, 6.25% Sweden, 3.125% Switzerland, and 3.125% Finland.

The Losers have the following FTSE Europe sector distribution: 51.7% Cyclical Services, 19.4% Financials, 12.9% Non-Cyclical Consumer Goods, 3.2% Basic Industries, 3.2% Cyclical Consumer Goods, 3.2% General Industrials, 3.2% Utilities, and 3.2% Non-Cyclical Services. The LEM Losers for the FTSE Europe are 54.5% Great Britain, 6.5% Austria, 6.5% Belgium, 6.5% Germany, 6.5% Denmark, 6.5% Sweden, 3.25% Greece, 3.25% Italy, 3.25% Netherlands, and 3.25% Portugal.

Figure 5: Selection of the LEM Winners on May 8, 2000 for the FTSE Europe

LEM Winners May 8, 2000	FTSE Sector	Country
ADECCO CHF10 (REG)	Cyclical Services	Switzerland
NOKIA	Information	Finland
BOUYGUES FFR100	Basic Industries	France
LVMH	Cyclical Consumer Goods	France
SAGEM FFR100	Information	France
CHRISTIAN DIOR	Cyclical Consumer Goods	France
FRANCE TELECOM ORD	Non-Cyclical Services	France
ST MICROELECTRONICS	Information	France
BOWTHORPE	General Industrials	Great Britain
EXEL PLC	Cyclical Services	Great Britain
BRITISH SKY BROADCASTING GROUP	Cyclical Services	Great Britain
CENTRICA	Utilities	Great Britain
ATTICA ENTERPRISES SA HOLDINGS	Cyclical Services	Greece
ETHNIKI GENERAL INS	Financials	Greece
HELLENIC SUGAR INDS	Non-Cyclical Consumer Goods	Greece
N.I.B.I.D (CR)	Financials	Greece
N.I.B.I.D (PR)	Financials	Greece
DELTA INFORMATICS (CR)	Information	Greece
HELLENIC DUTY FREE SHOPS (CR)	Cyclical Services	Greece
GENERAL CONSTRUCTION CO. (CR)	Basic Industries	Greece
HELLENIC TECHNODOMIKI (CR)	Basic Industries	Greece
INFORM P. LYKOS (CR)	Cyclical Services	Greece
M. J. MAILLIS (CB)	Non-Cyclical Consumer Goods	Greece
RADIO A. KORASSIDIS COMMERCIAL ENTERPRIS	Cyclical Services	Greece
INDEPENDENT NEWS	Cyclical Services	Ireland
RYANAIR HOLDINGS ORD IEP0.04	Cyclical Services	Ireland
ELAN CORPORATION PLC	Non-Cyclical Consumer Goods	Ireland
IONA CORPORATION PLC	Information	Ireland
KONINKLIJKE PHILIPS ELECTRONIC	General Industrials	Netherlands
ASM LITHOGRAPHY	Information	Netherlands
SKANDIA FORSAKRING SKR25	Financials	Sweden
NETCOM 'B'	Non-Cyclical Services	Sweden

Note: Sectors are FTSE Europe classifications.

Source: Lehman Brothers.

Figure 6: Selection of the LEM Losers on May 8, 2000 for the FTSE Europe

LEM Losers May 8, 2000	FTSE Sector	Country
AUSTRIAN AIRLINES	Cyclical Services	Austria
AUSTRIA TABAK&ATS100	Non-Cyclical Consumer Goods	Austria
GEVAERT PHOTO PRODUCTS CAP NPV	Basic Industries	Belgium
S.A. DIETEREN	Cyclical Services	Belgium
VOLKSWAGEN AG DM50	Cyclical Consumer Goods	Germany
METRO AG	Cyclical Services	Germany
RATIN A/S A	Cyclical Services	Denmark
RATIN A/S B	Cyclical Services	Denmark
BANK OF SCOTLAND(GOVERNOR' CO OF)	Financials	Great Britain
ARCADIA GROUP	Cyclical Services	Great Britain
LLOYDS TSB GROUP	Financials	Great Britain
MARKS' SPENCER	Cyclical Services	Great Britain
MCKECHNIE	General Industrials	Great Britain
PROVIDENT FINANCIAL	Financials	Great Britain
RENTOKIL INITIAL	Cyclical Services	Great Britain
ROYAL BANK OF SCOTLAND GROUP	Financials	Great Britain
SCOTTISH' NEWCASTLE	Cyclical Services	Great Britain
STOREHOUSE	Cyclical Services	Great Britain
TATE' LYLE	Non-Cyclical Consumer Goods	Great Britain
WHITBREAD	Cyclical Services	Great Britain
GREAT UNIVERSAL STORES	Cyclical Services	Great Britain
ABBAY NATIONAL	Financials	Great Britain
POWERGEN	Utilities	Great Britain
ARRIVA	Cyclical Services	Great Britain
STAGECOACH HLDGS	Cyclical Services	Great Britain
EFG EUROBANK&(CR)	Financials	Greece
RINASCENTE (LA) LIT1000	Cyclical Services	Italy
WOLTERS KLUWER CVA	Cyclical Services	Netherlands
JERONIMO MARTINS	Non-Cyclical Services	Portugal
GAMBRO B	Non-Cyclical Consumer Goods	Sweden
GAMBRO AB A	Non-Cyclical Consumer Goods	Sweden

Note: Sectors are FTSE Europe classifications.

Source: Lehman Brothers.

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